

LISTING OF CLAIMS

1-7. (canceled)

8. (Currently Amended) A flow-control method for data traffic transmitted through a synchronous digital hierarchy (SDH) network, comprising:

creating and encapsulating, during data transmission through said SDH network, one or more line flow-control protocol (LFP) frames, according to a ~~utilization condition~~ data volume of a frame cache of a first Ethernet over SDH/SONET (EoS) device coupled to said SDH network, wherein if the data volume exceeds an upper threshold of the frame cache, the created LFP frames contain a control field which controls to stop sending data, and if the data volume is lower than a lower threshold of the frame cache, the created LFP frames contain a control field which controls to start sending data, and wherein each LFP frame is mapped to an SDH payload as a common data frame;

transferring said one or more LFP frames to a second EoS device coupled to said SDH network;

demapping the SDH payload at said second EoS device;

identifying said one or more LFP frames at said second EoS device; and

~~phrasing~~interpreting and executing flow-control information contained in said one or more LFP frames at said second EoS device.

9. (Currently Amended) The flow-control method according to claim 8, wherein said creating and encapsulating comprises:

continuing to monitor said data volume in an uplink direction in said frame cache of said first EoS device;

inserting ~~a~~ said control field into each of said one or more LFP frames, said control field being based upon said data volume in said frame cache, wherein:

if said data volume exceeds ~~an~~ said upper threshold, said encapsulating includes periodically sending LFP frames whose control field controls to stop sending;

if said data volume falls below a said lower threshold, said encapsulating includes periodically sending LFP frames whose control field controls to start sending; and
if said data volume falls between said upper threshold and said lower threshold, said encapsulating does not send LFP frames; and
wherein said one or more LFP frames are inserted at the head of a data queue for encapsulation and are given priority, and wherein if there are no Ethernet frames being encapsulated, the LFP frames are immediately encapsulated, and otherwise, the LFP frames are encapsulated immediately after current Ethernet frames are encapsulated.

10. (canceled)

11. (Previously Presented) The flow-control method according to claim 9, wherein if said data volume exceeds said upper threshold, the control field will contain 0x0FFFFH, and if said data volume falls below said lower threshold, the control field will contain 0x0H; and wherein said control field is controlled in an Xon/Xoff fashion.

12. (Previously Presented) The flow-control method according to claim 8, wherein a carrier for LFP frames is configured according to a standard IEEE 802.3x PAUSE frame structure.

13. (Currently Amended) The flow-control method according to claim 8, wherein said second EoS device processes said LFP frames in an LFP frame regeneration pattern, said ~~framing~~ interpreting and executing comprising:

if the control field in an LFP frame does not control to start sending, halting encapsulating of data at said second EoS device to cause data to stack up and to cause a user device coupled to said second EoS device to stop sending Ethernet frames, said LFP frame being defined by IEEE 802.3x as a PAUSE frame or a back pressure signal; and

if the control field in an LFP frame controls to start sending, continuing to normally encapsulate and map data at said second EoS device.

14. (Currently Amended) The flow-control method according to claim 13, wherein when said user device coupled to said second EoS device stops sending data to said second EoS device, the data volume in the data cache of said first EoS device decreases gradually;

wherein when the data volume in the data cache of said first EoS device reaches said lower threshold, the first EoS device generates at least one LFP frame having a control field to start sending; and

wherein said LFP frames are given priority for decapsulation at said second EoS device to ~~phrase~~interpret and execute flow-control to control the user device coupled to said second EoS device to send data again.

15. (Currently Amended) The flow-control method according to claim 8, wherein an LFP transparent pattern is used when said second EoS device identifies and processes an LFP frame; and

wherein said second EoS device ~~explains~~interprets and executes said LFP frames according to whether ~~said a~~ user device coupled to said second EoS device supports full duplex, wherein:

if said user device works in full duplex mode, it is unnecessary to ~~phrase~~interpret the LFP frames, and the LFP frames are sent directly to said user device; and

if said user device works in half duplex mode, the control field of each LFP frame is ~~phrased~~interpreted, wherein if the control field controls to start sending, a back pressure control signal will be cancelled, and otherwise, the back pressure control signal will be sent to make said user device detect a conflict and stop transmitting data.

16. (Currently Amended) The flow-control method according to claim 15, wherein when said user device coupled to said second EoS device stops sending data to said second EoS device, the data volume in the data cache of said first EoS device decreases gradually;

wherein when the data volume in the data cache of said first EoS device reaches said lower threshold, the first EoS device generates at least one LFP frame having a control field to start sending; and

wherein said LFP frames are given priority for decapsulation at said second EoS device to ~~phrase~~interpret and execute flow-control to control the user device coupled to said second EoS device to send data again.

17. (Previously Presented) A flow-control method for data traffic transmitted through a synchronous digital hierarchy (SDH) network, comprising:

monitoring, at a first device coupled to said SDH network, a receive data cache to determine a data volume in said receive data cache;

comparing said data volume to a predetermined upper threshold and a predetermined lower threshold;

creating and transmitting one or more flow-control frames to a second device coupled to said SDH network if said data volume is not between said upper threshold and said lower threshold, wherein if said data volume is greater than said upper threshold, at least one of said flow-control frames contains a control field to control said second device to stop transmitting data, and where if said data volume is less than said lower threshold, at least one of said flow-control frames contains a control field to control said second device to start sending data.

18. (Previously Presented) The flow-control method according to claim 17, wherein each of said first and second devices comprises an Ethernet over SDH/SONET (EoS) device.

19. (Previously Presented) The flow-control method according to claim 17, wherein a carrier of said flow-control frames is configured to have a PAUSE frame structure defined under the IEEE 802.3x standard.

20. (Previously Presented) The flow-control method according to claim 17, wherein said control field to stop transmitting data comprises 0x0FFFFH and said control field to start sending data comprises 0x0H.

21. (Previously Presented) The flow-control method according to claim 20, wherein Xon/Xoff control is used to control said control field.

22. (Previously Presented) The flow-control method according to claim 17, wherein said creating and transmitting one or more flow-control frames includes:

- encapsulating control information; and
- mapping a result of said encapsulating.

23. (Previously Presented) The flow-control method according to claim 22, wherein said encapsulating control information comprises:

- encapsulating at least one said flow-control frame before encapsulating any other frames unless there are data frames in the process of being encapsulated, in which case the at least one said flow-control frame is encapsulated immediately following encapsulating said data frames.

24. (Previously Presented) The flow-control method according to claim 17, wherein said creating and transmitting one or more flow-control frames includes:

- periodically transmitting flow-control frames to control said second device to stop transmitting data, as long as said data volume remains above said upper threshold.

25. (Previously Presented) A flow-control method for data traffic transmitted through a synchronous digital hierarchy (SDH) network, comprising:

- receiving, at a first device coupled to said SDH network, one or more flow-control frames from a second device coupled to said SDH network, wherein each flow-control frame contains a control field that controls a data device coupled to said first device to either stop sending data or start sending data, where said control field is selected based on a comparison of a data volume in a receive cache of said second device to predetermined upper and lower thresholds; and

- processing said one or more flow-control frames at said first device to control a data device coupled to said first device to stop transmitting data or start transmitting data.

26. (Previously Presented) The flow-control method according to claim 25, wherein said processing comprises:

identifying the one or more flow-control frames; and

processing the one or more flow-control frames in a transparent manner according to whether the data device coupled to said first device operates in a full-duplex mode or a half-duplex mode, wherein:

if the data device coupled to said first device operates in a full-duplex mode, each of said one or more flow-control frames is transferred directly to the data device; and

if the data device coupled to said first device operates in a half-duplex mode, the first device executes a control function indicated by the one or more flow-control frames.

27. (Previously Presented) The flow-control method according to claim 26, wherein when said first device executes a control function indicated by the one or more flow control frames, executing the control function causes the first device to either transmit or to refrain from transmitting a back pressure signal to said data device.

28. (Previously Presented) The flow-control method according to claim 25, wherein said processing comprises:

identifying the one or more flow-control frames; and

processing the one or more flow-control frames in a regenerative manner.

29. (Previously Presented) The flow-control method according to claim 28, wherein said processing the one or more flow-control frames in a regenerative manner comprises:

ceasing to receive data from said data device by said first device if a flow-control frame received from said second device indicates to control said data device to stop transmitting; and

normally processing data from said data device by said first device if a flow-control frame received from said second device indicates to control said data device to start transmitting.